Mechanical Integrated Services and Technologies (MIST)

All deliverables and requirements must follow the guidelines in NNG15CR64C

Task Order Statement of Work (SOW)

Date: 8/28/2018
Task Name: TIRS-2 Integration and Test Support.
Task No. / Mod: 99/6
Task Monitor (TM) : **REDACTED**
Contract number: NNG15CR64C
Contract SOW Reference: FUNCTION 4 – Implementation Phase Services - Related Discipline Engineering,

I. Scope

a. Background

The TIRS-2 instrument will fly on the LandSat 9 mission. TIRS-2 will produce radiometrically calibrated, geo-located thermal image data. The instrument will monitor water consumption on a field-by-field basis in the U.S. West and internationally.

TIRS 2 will be based upon the TIRS-1 design flown on LandSat-8. Much of the test equipment used for the development and test of TIRS-1will be repurposed for use on TIRS-2. The TIRS-2 design will be enhanced to increase instrument reliability.

This statement of work (SOW) identifies work performed by the contractor to modify, enhance and test the existing ground support equipment.

The work will be performed on separate subtask as identified below. This allows the project to allocate efforts to the proper project WBS element.

Subtask	Title	SOW Elements
1	EGSE	1
2	Optical Support	2
3	Trending System Demo	delete
2	Spatial Testing	4

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2	Stray Light Testing	5
4	Integration and Test technician support	6
4	Integration and Test Support	7

b. Summary of work

1. TIRS-2 I&T Support
    a. Electrical Ground Support equipment (EGSE) engineering.
        i. Oversee the modification of the TIRS-2 electrical test equipment.
        ii. Design required harness and equipment modifications.
        iii. Develop test procedures for the certification of the test equipment.
        iv. Update instrument test procs and procedures to incorporate new design changes.
        v. Provide documentation of changes or new designs and submit to the configuration management process.
        vi. Hold a peer review of the EGSE design prior to the TIRS-2 PDR and CDR.

Mod 1:

1. TIRS2 I&T Support
    a. EGSE
        i. Continue EGSE support as defined above
2. ITS2 Optical Support
    a. Optical Testing Support
        b. Generate the alignment plan for the TIRS2 instrument based on the TIRS-1 plan. Develop the component level testing and work with TIRS-2 to pass on knowledge from TIRS1.
3. Trending System Demo
        a. Delete

Mod 2:

2. Additional ITS2 Optical Support

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a. Support optical analysis and design tasks related to the TIRS2 cryogenic test planning.
b. Support optical analysis and design tasks related to telescope image quality testing.

4. Spatial Testing
    a. Support optical integration tasks related to telescope image quality testing.

Mod 3:

5. Optical Metrology Engineer duties:

    a. Lead stray light testing in the CIAF for flight and flight spare telescope tests
    b. Provide support for scene mirror alignment and testing work under the optics and SSM group
    c. Provide support for telescope and FPA alignment activities

Mod 4:

6. Integration and Test technician support.
    a. Provide mechanical technician support for integration and test activities

Mod 5:

7. Integration and Test engineering support.

a. Provide integration and test support for the TIRS-2 instrument.

a. Required skills/knowledge

1. I&T Support
    a. Senior electrical engineer with the following experience and background.
        vii. Experience designing and building electronic test racks for flight equipment.
        viii. Experience designing test harnesses for flight hardware.
        ix. Experience testing flight electronics hardware.
        x. Experience running integration procedures and performing tests in an integration and test environment.

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xi. Experience with performing tests using ITOS or ASIST or other similar test software environment.

Mod 1:

1. I&T Support
   b. Trending System Support
      i. STARS trending system development experience.
2. Optical Support
   a. Optical Testing Support
      i. Optics engineer with past experience testing TIRS-1.

Mod 2:

2. Additional ITS2 Optical Support
   a. Familiar with metrology techniques in addition to optical design knowledge. Experience with interferometry metrology techniques
4. Spatial Testing
   a. Experience with image quality testing.

Mod 3:

5. Stray Light Testing
   a. Familiar with metrology techniques in addition to optical design knowledge. Experience with interferometry metrology techniques
   b. Experience with stray light testing
2. Increase level of support for optical support through end of period of performance.

Mod 4:

6. Integration and Test technician support
   a. Experience working with flight hardware.
   b. ESD and cleanroom certified per GSFC standards.

Mod 5:

7. Integration and Test engineering support

a. Experience planning and executing integration and test efforts.
b. ESD and cleanroom certified per GSFC standards.

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Mod 6

8. Remove trending task.

II. Period of Performance

The period during which the work for this task shall be performed is from task award thru September 30, 2016.

Mod 1:

Period of performance for this task is award through Sept 30, 2017.

Mod 2:

No change to period of performance.

Mod 3:

No change to period of performance.

Mod 4:

Change period of performance to Sept 30, 2018.

Mod 5:

No change. Through Sept 30, 2018

Mod 6:

Change period of performance through Sept 30, 2019.

Monthly Deliverable Report

The contractor shall provide no later than the 10th working day following the close of the contractor's monthly accounting period a 533M for each individual subtask and a summary 533M at the total task level. If it is not possible to provide the individual 533M at the subtask level, the contractor shall provide on the 10th working day following the close of the contractor's monthly accounting period a break out of hours and costs by subtasks to the Contract Resource Analyst, Contracting Officer, and the Task Monitor. The report shall include current period hours and costs, cumulative to date hours and costs, and cumulative costs with a one-month cost plan. When needed, the contractor shall make adjustments to the distribution of costs, layout of the report and change reportable elements as specified by the Task Monitor and/or the Contract Resource Analyst.

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III. Deliverables/Schedules/Milestones

Ref#	Deliverables	Due Date
1	Status Reports	Weekly
2	Performance Reports	Monthly
3	End-of-task Report	End of task

IV. Management Approach

a. Staff Allocation, Expertise, and Skill Mix

The contractor shall staff this work item with the appropriate skill mix and staffing level for the work.

b. Configuration Management

Documents generated for this task will be covered under the TIRS-2 Configuration Management Plan.

c. Facilities

Appropriate IT devices to support the analyses, specification development, and report development are required. It shall be the contractor's responsibility to provide and set up local workstations and network connections at the contractor's off-site facilities as required, and to install any required tools and utilities on the contractor's equipment.

d. Risk Management and Best Practices

The contractor shall manage schedule, cost, and technical risk through monitoring and reporting of progress and performance metrics, identifying issues well in advance of negative

consequences, recommending corrective action to the TM, and implementing corrective actions with the compliance of the TM.

e. Performance Metrics

The work performed for this task will be evaluated by the TM based on the technical merit. The TM shall develop detailed performance metrics that shall reflect the contractor's performance in meeting specific mission requirements, deliverables and delivery schedule, and the contractor's cost. Technical evaluation of the task performance is a subjective combination of performance metrics, technical quality of deliverables, cost control, significant events, innovations and meeting requirements set forth in the SOW.

f. Government Furnished Facilities, Equipment, Software and Other Resources

The Government will provide account and passwords to government-furnished workstations where existing versions of various relevant software packages shall be maintained. It shall be the contractor's responsibility to complete any GSFC required security-related training courses.

The contractor shall provide Systems Administration service and support equipment required for onsite contractor functions

g. Quality Assurance Requirements

The contractor shall comply with the TIRS-2 Mission Assurance Implementation Plan (MAIP), TIRS2-SMA-PLAN-0006; found in the TIRS-2 configuration management system.

V. ODC (Travel and Procurement)

There is no non-local travel for this SOW.

VI. Work Location

This work shall be performed primarily on-site at the Goddard Space Flight Center, but the contractor may be required to perform some work at the contractor's facility.

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VII. Reporting Requirements

a. Weekly status report

The contractor shall generate Performance Reports every week to the TM. The report shall include, as a minimum, a summary of the weeks highlights/accomplishments, identify issues or risks and customer meetings.

b. Monthly Progress Reports

The contractor shall provide monthly technical and schedule progress reporting to adequately describe the activities of the contractor team to the TM. The contractor shall provide monthly cost reporting in accordance with the WBS. The contractor, including subcontractors, shall be available to attend monthly status meetings.

VIII. Security Requirements

The contractor shall comply with Information Technology Security procedures and requirements as defined by NPR 2810.1A in the performance of this task. In addition, the contractor shall comply with all applicable federal rules and regulations and agency directives.

IX. Safety

The TIRS-2 Safety/Mission Assurance Officer shall:

- Ensure all contractor personnel understand their safety responsibilities and follow safe practices for all lab and office operations.
- Ensure branch training requirements for contractor employees are implemented.
- Attend safety related training applicable to the operations under their area of responsibility.

The contractor personnel shall:

- Follow safety requirements when performing any task, keeping their workplace in a safe manner.
- Attend all required training, set forth by the ESES-II Safety/Mission Assurance Officer, ensuring certifications are current.

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X. Data Rights

This SOW shall adhere to the following Data Rights clause, as stated in this contract: "the default Data Rights clause under this contract is FAR 52.227-14 RIGHTS IN DATA-GENERAL as modified by NASA FAR Supplement 1852.227-14-Alternate II and Alternate III and GSFC 52.227-90. Any exceptions to this clause will be covered by FAR 52.227-17 RIGHTS IN DATA-SPECIAL WORKS as modified by NASA FAR Supplement 1852.227-17, and, if applicable, GSFC 52-227.93."

XI. Applicable Documents

1. TIRS2-SMA-PLAN-0006, TIRS-2 Mission Assurance Implementation Plan (MAIP)
2. TIRS2-SMA-PLAN-0007, TIRS-2 System Safety Program Plan

XII. References